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PATENT COOPERATION TREATY  
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From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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16 FEB 2005

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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

14.02.2005

Applicant's or agent's file reference  
L0001PCTW034

IMPORTANT NOTIFICATION

International application No.  
PCT/EP 03/12389

International filing date (day/month/year)  
06.11.2003

Priority date (day/month/year)  
20.11.2002

Applicant  
LANFRANCHI S.R.L. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:



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**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference L0001PCTW034	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/EP 03/12389	International filing date (day/month/year) 06.11.2003	Priority date (day/month/year) 20.11.2002	
International Patent Classification (IPC) or national classification and IPC B67C9/00			
Applicant LANFRANCHI S.R.L. et al.			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a.  (*sent to the applicant and to the International Bureau*) a total of 10 sheets, as follows:
    - sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b.  (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

Date of submission of the demand  14.06.2004	Date of completion of this report  14.02.2005
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Müller, C Telephone No. +49 89 2399-6894



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP 03/12389

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:

- international search (under Rules 12.3 and 23.1(b))
- publication of the international application (under Rule 12.4)
- international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

4-7	as originally filed
1, 1a, 2, 3	received on 29.10.2004 with letter of 27.10.2004

**Claims, Numbers**

1-10	received on 29.10.2004 with letter of 27.10.2004
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**Drawings, Sheets**

1/4-4/4	as originally filed
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a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages 1-3
- the claims, Nos. 1
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP 03/12389

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-10
	No:	Claims	
Inventive step (IS)	Yes:	Claims	2-10
	No:	Claims	1
Industrial applicability (IA)	Yes:	Claims	1-10
	No:	Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/EP 03/12389

**Re Item I**

**Basis of the report**

The corrections filed with the letter dated 27-10-2004 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT in combination with Rule 66.1 PCT. The application was originally filed in English which is, therefore, the authentic language. The correction may not be based on the priority document. Thus, the corrections are to be considered as amendments going beyond the original disclosure (see also Applicant's Guide I Nr. 305).

Hence, the present International Preliminary Report on Patentability is drawn up on the basis of the documents as if the amendments not have been made.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: GB-A-1316252

D2: EP-A-0727367

1. The terms and the grammatical structure used in claim 1 are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT). For example the use of the word "in" in claim 1 leads to an ambiguity since it defines a relationship between two different physical entities (i.e. the adjusting means and the aligning machine). Hence, it becomes unclear whether the protection sought is limited to the sub-unit **per se** (i.e. the adjusting means) or whether the unit as a whole (aligning machine having adjusting means) is to be protected (see also PCT/GL/ISPE 5.30).

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2. The above-mentioned lack of clarity notwithstanding, the subject-matter of claim 1 is not considered as being inventive in the meaning of Article 33(3) PCT.
  - 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and insofar as this claim can be understood (see Section VIII), this document shows the following features thereof (the references in parentheses applying to this document):

An apparatus for opening and emptying bottles, whereby the apparatus is foreseen with a cylindrical wall (29) and whereby the emptying means (27) rotate about an axis (28), the emptying means consist of a plurality of holders for the bottles to be emptied and whereby their content is emptied into a discharge hopper (31) placed underneath the emptying apparatus.

The subject-matter of claim 1 therefore differs from this known state of the art in that:

the holders for the vessels to be emptied adapt to the size and shape of the vessel in the very moment the respective vessel is picked up by the holder for the vessels.

The problem to be solved by the present invention may therefore be regarded as providing an universal holder for vessels to be emptied immediately adapting to the dimensions of the respective vessel.

The feature of an universal holder for bottles having different shapes and sizes as well as the above stated problem are described in document D2 as providing the same advantages as in the present application (see D2, figures 2-17 and column 1, lines 5-10). Therefore, the skilled person, confronted with the above problem, would apply the teachings of D2 to the apparatus disclosed in D1 in order to solve the problem posed.

3. The subject-matter of claims 2-10, however, is neither anticipated by the prior art, nor would find the skilled person a hint of how to amend the prior art in order to end up

**INTERNATIONAL PRELIMINARY  
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(SEPARATE SHEET)**

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with the same or similar solution as in the claims. Therefore, the subject-matter of claims 2-10 is considered as being novel and inventive in the meaning of Article 33(2) and (3) PCT.

EVACUATION'SDEVICE FOR AUTOMATICALLY ADJUSTING MEANS FOR EMPTYING  
PLASTICS VESSELS IN AN ORIENTING AND ALIGNING MACHINE.

## DESCRIPTION

EVACUATION'S

The present invention relates to a device for automatically adjusting means for  
emptying plastic vessels in an orienting and aligning machine.

Device or systems for automatically adjusting orienting and aligning machines  
depending on the vessel format, and more precisely for adjusting the emptying device  
composed of a set of discharge cradles and of underlying channels that carry the  
vessels in a vertical and aligned arrangement, are already known. *«INSERT PAG. 2A»*

All the known machines allow an adjustment depending on similar vessels.

Briefly stated, the format change is performed only and exclusively within bottles  
that, though changing their capacity, keep similar ratios among the three major  
dimensions.

The main object of the present invention is adjusting the emptying means with  
anyway variable vessels without taking into account determined dimensional ratios but  
depending on three major quantities that can be defined as:

H) vessel height;

A) longitudinal dimension of the vessel base;

B) transverse dimension of the vessel base.

A) and B) could in some cases coincide for vessels with square section or for  
vessels with circular section, in which case A) and B) would coincide with  
the vessel diameter.

These three dimensions have influence on the emptying device geometry, where  
the term emptying device means cradle and discharge channel.

More precisely, in the cradle part, the relevant geometries are H) and B), where

An example of the prior art is disclosed in EP 1 016 601 and regard an adjustable unit for unscrambling empty containers, using compartments with open bottom delimited by arrangements for supporting the open end of the vessel.

An other machine is disclosed in EP 0 578 602 and regard an adjustable unit for unscrambling empty vessel, wherein the cavities are formed by a series of individual compartments similarly to the discharge chutes, both the compartments and the chutes being apt to be fixed in a plug-in connection to the periphery of rotary structure.

The same applicant discloses an unscramble machine in WO 03/024847.

B) is less than or equal to A).

Underlying the cradle, a discharge channel is provided that can be substantially divided into two areas, a funnel-shaped upper part and a vertical channel-shaped end part.

5 The funnel-shaped upper part is governed by three geometries: in the upper (top) inlet part dimension H) is determined.

Afterwards, when the vessel has been straightened, namely vertically placed, the dimension determining the funnel is A) along a direction and B) along the other direction to avoid rotating the vessel around its own vertical axis.

10 A further object of the present invention is allowing, also *a posteriori*, to handle the vessels without knowing *a priori* the vessel dimensions or the ratios among vessels, and therefore being able to be completely freed from the above-mentioned three major dimensions H), A) and B).

EVACUATION'S  
A further object is being able to operate on the emptying means depending on the 15 three above-mentioned dimensions one independently from the other.

A further object of the invention is intervening on every single adjustment at different times.

These objects are all obtained by the device for automatically adjusting the EVACUATION'S  
emptying means of plastics vessels in an orienting and aligning machine, object of the 20 present invention, that is characterised in what is provided in the below-enclosed claims.

These and other features will be better pointed out by the following description of a preferred embodiment, shown merely as a non-limiting example, in the enclosed drawing tables in which:

25 - figure 1 shows in a plan view the part of the emptying device cradle;

EVACUATING

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- figure 2 shows an elevation of the emptying device in a front view;
- figure 3 shows the emptying device in a side view;
- figure 4 shows in a plan view a part of figure 2;
- figure 5 shows in a schematic perspective view an emptying device in which adjustment drives are pointed out;

5 adjustment drives are pointed out.

- figure 6 shows a vessel in which the three major dimensions are pointed out.

With reference to figures 1 and 2, 1 designates a fixed cylinder wall of a straightening and aligning machine for vessels or bottles.

Inside this cylinder wall, as known, EVACUATION'S emptying means are placed, that are substantially composed of a plurality of cradles or tanks 2 and of a corresponding plurality of discharge hoppers or channels 3 placed below the tanks.

10 The emptying devices are supported by an internal cylinder wall 4 rotating around a vertical axis.

The tank or cradle provides for a slider 5 whose position can be adjusted inside the cradle itself depending on the vessel height.

15 The adjustment is obtained by motoring the slider itself through a pneumatic cylinder 6 carried by a slider 7 moving horizontally and perpendicularly to the pneumatic cylinder axis.

The pneumatic cylinder stem is made interact with a bracket 8 integral with the slider 5 once a positioning locking system has been deactivated.

20 For such purpose a rack 9 is provided that operates as locking once having reached the desired position that defines dimension H).

Inside the tank a blade 10 is also provided, and is longitudinally arranged along the external tank wall to define the tank width depending on vessel dimension B).

25 Having placed the blade along the external tank wall, its inside can be used as fixed

DEVICECLAIMS  
EVACUATION'S

1. Machine for automatically adjusting means for emptying plastics vessels in an orienting and aligning machine in which the emptying means are integral with a cylinder wall (4) rotating around a vertical or slanted axis and comprise a plurality of cradles or tanks (2) under which a corresponding plurality of discharge hoppers or channels (3) are placed, characterised in that it provides adjusting means for cradles and vertical channel adapted to allow handling the vessels without knowing *a priori* the vessel dimensions and the ratios among vessels with different capacity in order to be able to be completely freed from the three major dimensions, said means operating on moving portions of the emptying means one independently from the other.

10      DEVICE 2. Machine according to claim 1, characterised in that it provides for a slider (5), whose position can be adjusted inside the cradle (2) depending on the vessel height, said slider being able to be moved through a pneumatic cylinder equipped with a radial movement for approaching to and going away from a bracket (8) integral with the slider and an horizontal translation movement perpendicular to the radial movement.

15      DEVICE 3. Machine according to claim 2, characterised in that it provides for a rack locking (9) to ensure the position reached by the slider (5).

20      DEVICE 4. Machine according to claim 1, characterised in that it provides for a blade (10) arranged longitudinally along the external tank wall to define the tank width depending on the transverse vessel dimension (B), the blade being equipped with means for forcing it to rotate around an idle shaft (11) supported by the tank itself.

25      DEVICE 5. Machine according to claim 1, characterised in that it comprises two false backs, an upper one (21) and a lower one (22), each one of which can change its slant with respect to the vertical direction to define the discharge channel (3) depth.

DEVICE 6. Machine according to claim 5, characterised in that it comprises a small cable

(23) that descends down to the lower channel part and that actuates a worm screw (25) that drags and moves a small triangular block (26) inserted inside a slot (27) slanted with respect to the worm screw axis and obtained in a bracket (28) integral with the lower back (22).

5 <sup>DEVICE</sup> 7. Machine according to claims 5 and 6, characterised in that it provides for a connecting rod (32) and lever (30) system kinematically connected to the upper false back (21) and to the lower false back (22) to transmit the displacement movement from one back to the other.

10 <sup>DEVICE</sup> 8. Machine according to claim 1, characterised in that it comprises a vertical wall (45) that can translate in order to widen or shorten the discharge channel (3) dimension depending on the vessel dimension (B).

15 <sup>DEVICE</sup> 9. Machine according to claims 1 and 8, characterised in that it provides a slanted wall (46) upward hinged to the vertical wall (45) which has a varying position depending on the slider (5) of the cradle (2), said slanted wall (46) being able to be subjected to a rotating-translating movement.

20 <sup>DEVICE</sup> 10. Machine according to claim 9, characterised in that it comprises a plate (48) integral with the slanted wall (46) whose function is closing the space that is created in the bottom wall when said slanted wall moves.

## DEVICE FOR AUTOMATICALLY ADJUSTING MEANS FOR EMPTYING PLASTICS VESSELS IN AN ORIENTING AND ALIGNING MACHINE.

### D E S C R I P T I O N

The present invention relates to a device for automatically adjusting means for  
5 emptying plastic vessels in an orienting and aligning machine.

Device or systems for automatically adjusting orienting and aligning machines depending on the vessel format, and more precisely for adjusting the emptying device composed of a set of discharge cradles and of underlying channels that carry the vessels in a vertical and aligned arrangement, are already known.

10 All the known machines allow an adjustment depending on similar vessels.

Briefly stated, the format change is performed only and exclusively within bottles that, though changing their capacity, keep similar ratios among the three major dimensions.

15 The main object of the present invention is adjusting the emptying means with anyway variable vessels without taking into account determined dimensional ratios but depending on three major quantities that can be defined as:

H) vessel height;

A) longitudinal dimension of the vessel base;

B) transverse dimension of the vessel base.

20 A) and B) could in some cases coincide for vessels with square section or for vessels with circular section, in which case A) and B) would coincide with the vessel diameter.

These three dimensions have influence on the emptying device geometry, where the term emptying device means cradle and discharge channel.

25 More precisely, in the cradle part, the relevant geometries are H) and B), where

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B) is less than or equal to A).

Underlying the cradle, a discharge channel is provided that can be substantially divided into two areas, a funnel-shaped upper part and a vertical channel-shaped end part.

5 The funnel-shaped upper part is governed by three geometries: in the upper (top) inlet part dimension H) is determined.

Afterwards, when the vessel has been straightened, namely vertically placed, the dimension determining the funnel is A) along a direction and B) along the other direction to avoid rotating the vessel around its own vertical axis.

10 A further object of the present invention is allowing, also *a posteriori*, to handle the vessels without knowing *a priori* the vessel dimensions or the ratios among vessels, and therefore being able to be completely freed from the above-mentioned three major dimensions H), A) and B).

15 A further object is being able to operate on the emptying means depending on the three above-mentioned dimensions one independently from the other.

A further object of the invention is intervening on every single adjustment at different times.

These objects are all obtained by the device for automatically adjusting the emptying means of plastics vessels in an orienting and aligning machine, object of the 20 present invention, that is characterised in what is provided in the below-enclosed claims.

These and other features will be better pointed out by the following description of a preferred embodiment, shown merely as a non-limiting example, in the enclosed drawing tables in which:

25 - figure 1 shows in a plan view the part of the emptying device cradle;

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- figure 2 shows an elevation of the emptying device in a front view;
- figure 3 shows the emptying device in a side view;
- figure 4 shows in a plan view a part of figure 2;
- figure 5 shows in a schematic perspective view an emptying device in which  
5 adjustment drives are pointed out;

- figure 6 shows a vessel in which the three major dimensions are pointed out.

With reference to figures 1 and 2, 1 designates a fixed cylinder wall of a straightening and aligning machine for vessels or bottles.

10 Inside this cylinder wall, as known, emptying means are placed, that are substantially composed of a plurality of cradles or tanks 2 and of a corresponding plurality of discharge hoppers or channels 3 placed below the tanks.

The emptying devices are supported by an internal cylinder wall 4 rotating around a vertical axis.

15 The tank or cradle provides for a slider 5 whose position can be adjusted inside the cradle itself depending on the vessel height.

The adjustment is obtained by motoring the slider itself through a pneumatic cylinder 6 carried by a slider 7 moving horizontally and perpendicularly to the pneumatic cylinder axis.

20 The pneumatic cylinder stem is made interact with a bracket 8 integral with the slider 5 once a positioning locking system has been deactivated.

For such purpose a rack 9 is provided that operates as locking once having reached the desired position that defines dimension H).

Inside the tank a blade 10 is also provided, and is longitudinally arranged along the external tank wall to define the tank width depending on vessel dimension B).

25 Having placed the blade along the external tank wall, its inside can be used as fixed

## CLAIMS

1. Machine for automatically adjusting means for emptying plastics vessels in an orienting and aligning machine in which the emptying means are integral with a cylinder wall (4) rotating around a vertical or slanted axis and comprise a plurality of cradles or tanks (2) under which a corresponding plurality of discharge hoppers or channels (3) are placed, characterised in that it provides adjusting means for cradles and vertical channel adapted to allow handling the vessels without knowing *a priori* the vessel dimensions and the ratios among vessels with different capacity in order to be able to be completely freed from the three major dimensions, said means operating on moving portions of the emptying means one independently from the other.
2. Machine according to claim 1, characterised in that it provides for a slider (5) whose position can be adjusted inside the cradle (2) depending on the vessel height, said slider being able to be moved through a pneumatic cylinder equipped with a radial movement for approaching to and going away from a bracket (8) integral with the slider and an horizontal translation movement perpendicular to the radial movement.
3. Machine according to claim 2, characterised in that it provides for a rack locking (9) to ensure the position reached by the slider (5).
4. Machine according to claim 1, characterised in that it provides for a blade (10) arranged longitudinally along the external tank wall to define the tank width depending on the transverse vessel dimension (B), the blade being equipped with means for forcing it to rotate around an idle shaft (11) supported by the tank itself.
5. Machine according to claim 1, characterised in that it comprises two false backs, an upper one (21) and a lower one (22), each one of which can change its slant with respect to the vertical direction to define the discharge channel (3) depth.
6. Machine according to claim 5, characterised in that it comprises a small cable

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